twall®*Basic16* mobile / stationary

Interactive sports and training device

User manual Rev. 4.0

Data-CD

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Hardware documentation

1 Product description

The **t**wall® is an interactive sports device using light pulses to specifically initiate motion sequences. At a wall consisting of evenly arranged, large pads, colored signals light up (available separately as well as in combination) and have to be deactivated by touching them again which defines sterical movements. Depending on the training sequence used condition, agility, the ability to respond, and if required specific muscular endurance can be trained. The different elements can be predefined in the program so that they light up in a selective or random sequence, position and speed. The task is always the same: To deactivate the light as quickly as possible by pressing the buttons.

The software-controlled program sequences provide both individual training and group training. By controlling each touch element individually it is possible to adjust the **t**wall® training settings according to size, sphere of activity, visual perception as well as the tactile situation of the person trained. Furthermore, product version **t**wall® color allows to integrate cognitive tasks using various colors and sounds. Also, the small construction depth makes it easy to integrate **t**wall® to existing room concepts.

1.1 Handling according to regulations

The use of the **t**wall® is intended for training and game purposes of human beings exclusively. It is strictly recommended that the operator checks if the aptitude of the training program suits the training person. The **t**wall® has to be operated by the provided power supply unit only. As a precaution we would like to make you aware of the fact that the **t**wall® control panel generates high frequency, electric oscillations and despite compliance with legal regulations it may effect other electronic devices such as cardiac pacemakers etc.

Please be aware that the fastening of the **t**wall® has to be secured on site and is not within the manufacturers obligation. The applicability of the walls should be checked and plasterboard walls should be covered at least twice. Fixing elements such as screw anchors and tie bars must have adequate tensile strength.

The fastening should be checked on a regular basis. In the case that fixing elements become loose the **t**wall® must not be used any further until the fastening has been repaired entirely. Continuous operation of a single or all touch pads is not permitted as it can lead to a strong heating of the LED (light-emitting diode) modules. Sequences that force a single or all touch pads to light up for longer than 2 minutes are prohibited and can cause the loss of warranty.

2 Scope of delivery

2.1 Overview - scope of delivery of the twall®*Basic16* mobile

A1 **1 x Frame base**
A2 **1 x Aluminium frame**
A3 **1 x twall® Basic module**
A4 **2 x Weights**

C **Accessories** (included in scope of delivery)

D **Required tools** (not included in scope of delivery)

E **User manual and data-CD**

2.1.1 Detailed list of components including assembling steps

▼ **A1** **1 x Frame base consisting of:**

A1a	**2 x Frame base profiles**	45 x 90 x 1100 mm	1.77 x 3.54 x 43.31 inch
A1b	**3 x Frame base profiles**	45 x 90 x 1040 mm	1.77 x 3.54 x 40.94 inch
A1c	**2 x Frame base profiles**	45 x 90 x 418 mm	1.77 x 3.54 x 16.46 inch
A1d	**2 x Profile angles**	30 x 30 x 5 mm	1.18. x 1.18. x 0.20 inch

Assembling the frame base – two steps:

I. Mounting the frame base profiles
20 x Profile connectors
4 x Rubber feet (black, adhesive)
4 x Cover caps (black, plastic)
1 x Seal rubber (black)

II. Attaching the profile angles to the frame base
6 x Fillister head screws with flange **M8x16** (3 per angle)
6 x T-Nuts **M8** (3 per angle)

▼ **A2** **1 x Aluminium frame consisting of:**

A2a	**2 x Side supports**	45 x 90 x 1766 mm	1.77 x 3.54 x 69.53 inc
A2b	**2 x Cross members**	45 x 45 x 1040 mm	1.77 x 3.54 x 40.94 inch
A2c	**2 x Angle braces**	45 x 45 x 1113 mm	1.77 x 3.54 x 43.82 inch

Assembling the aluminium frame – three steps:

I. Setting up the side supports
4 x Profile connectors
2 x Cover caps (black, plastic)
2 x Combination profile (grey, PVC)

II. Mounting the angles braces
2 x Profile connectors with bended anchor 45° clockwise rotation
2 x Profile connectors with bended anchor 45° anticlockwise rotation

III. Fitting the cross members
4 x Profile connectors
2 x Socket head screws **M8x40**
2 x T-Nuts **M8**

A3 **1 x twall® Basic module**

Assembling the basic module:
6 x Socket head screws **M8x30**
6 x Washers
6 x T-Nuts **M8**

A4 **2 x Weights**

C **Accessories *(included in scope of delivery)***
C1 **1 x Power supply line** (with Euro connector)
C2 **1 x USB cable** (A/B)
C3 **1 x Adapter** (power supply unit)
C4 **1 x Set of Allen keys** (4 mm, 5 mm and 6 mm | 0.16 inch, 0.20 inch and 0.24 inch)

D **Required tools *(not included in scope of delivery)***
Stepladder
Spirit level
Measuring tape
Slot screwdriver 9 mm | 0.35 inch
Cutting tools
Torque wrench

E **User manual and data-CD**

2.2 Overview - scope of delivery of the twall®*Basic16* stationary

A3 **1 x twall® Basic module**

Assembling the basic module:
2 x Hexagon head wood screws **8x80**
2 x Dowels **Ux10x60**

C **Accessories** (included in scope of delivery)
Please see you accessories **t**wall®*Basic16* mobile

D **Required tools** (not included in scope of delivery)
Stepladder
Spirit level
Measuring tape
Hammer drill
Drill bit 12 mm | 0.47 inch
Wrench 13 mm | 0.51 inch

E **User manual and data-CD**

3 Assembly

ATTENTION: Before starting up an aclimatisation period of 2 houres is advisid. Pay attention that no condensation appears.

3.1 Mobile installation of the twall®*Basic16* mobile

3.1.1 Storage space requirements

In order to set up the twall® a compact and even stand space of a minimum of 2 x 2m | 78.74 x 78.74 inch is required ***(fig. 3.1-1)***. It must carry a weight of at least 200 kg | 31.5 stone.

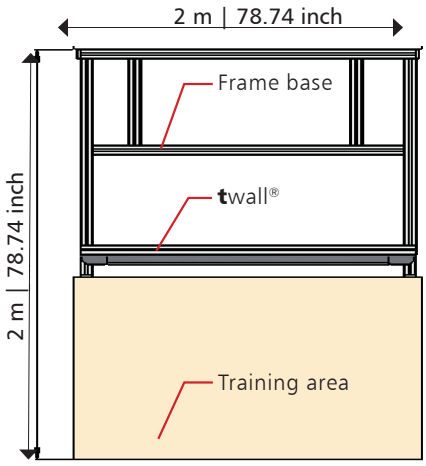
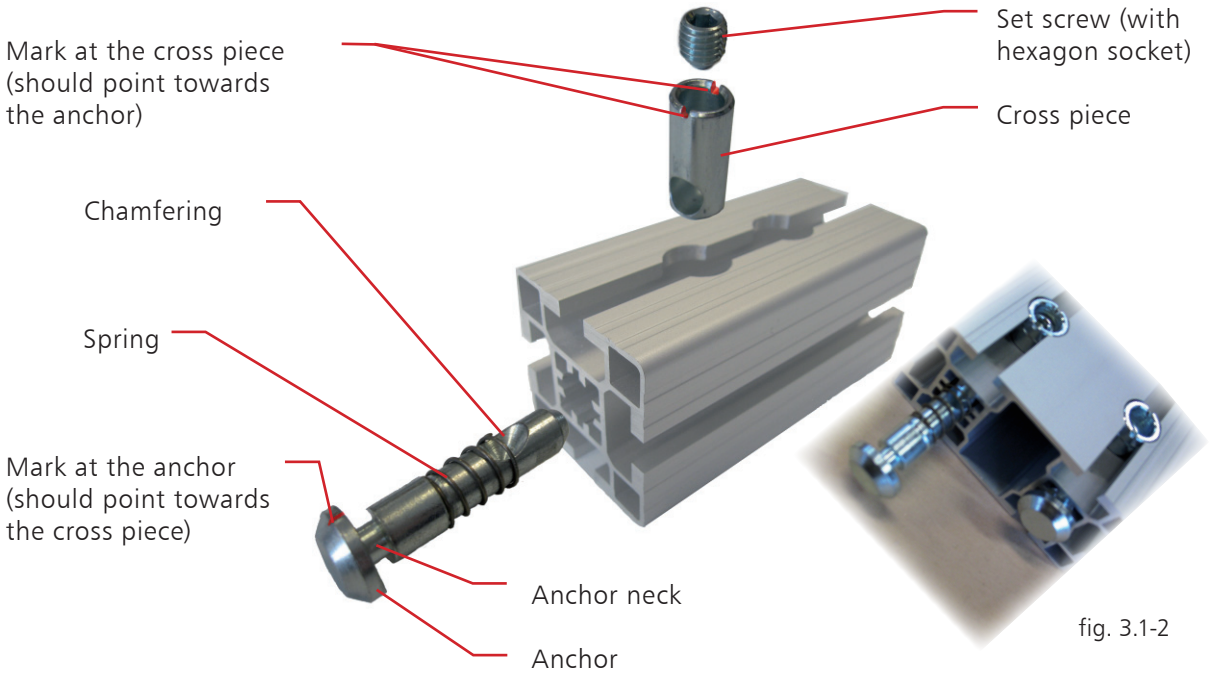


fig. 3.1-1

You will require the following tools:.

- Allen keys (included in scope of delivery)
- Stepladder
- Spirit level
- Measuring tape
- hammer drill
- Drill bit 12 mm | 0.47 inch
- Wrench 13 mm | 0.51 inch
- Cutting tools
- Torque wrench

3.1.2 Assembly principle of the profile connectors


Mark at the cross piece (should point towards the anchor)
Set screw (with hexagon socket)
Cross piece
Chamfering
Spring
Mark at the anchor (should point towards the cross piece)
Anchor neck
Anchor
fig. 3.1-2

PLEASE NOTE: For more information, please see view of individual assembling steps on separate handout.

3.1.3 Assembly instructions

3.1.3.1 Assembling the frame base

I. Mounting the frame base profiles:

Step ❶ Please remove the packaging material. You can use it as a pad during the assembling to avoid that the components are scratched or damaged.

Step ❷ Before you start putting together the frame base **A1** ***(fig. 3.1-3)***, please attach all the profile connectors to the provided positions at the frame base profiles first.

! In order to fasten the profile connectors, the chamfering should point towards the cross piece which is indicated by the mark at the anchor. Slightly screw the set screw into the cross piece using the corresponding Allen key. The anchor will be drawn into the profile automatically.

! It is important that you can still see the neck of the anchor ***(fig. 3.1-2)*** to be able to insert it into the lead channels at a later point. It might be the case that you need to push the anchor slightly against the cross piece while screwing it in ***(fig. 3.1-4)***.

Step ❸ Shove the two (2) frame base profiles **A1c** into the upper lead channels of the frame profiles **A1b** ***(fig. 3.1-5)*** Please make sure that the cross pieces of the connectors in the frame base profiles **A1c** point downwards and the cross pieces of the connectors in the frame base profile **A1b** point outwards ***(fig. 3.1-6)***.

Step ❹ Place the third frame base profile A2b next to the frame profile **A1b** which is closest to you. The cross pieces of the profile connectors should point inwards (away from you).

Step ❺ Now mount the frame base profiles **A1a** to the three (3) frame base profiles **A1b**. The profile connectors attached to the frame base profiles **A1b** will be inserted into the lead channels of the frame base profiles **A1a**.

! Please make sure that the projecting ends of the frame base profiles **A1a** point towards you. The rear ends should be on the same level as the frame base profile A2b and be flush-mounted by strongly tightening the profile connectors at the rear side of the frame base profile **A1b** (ca. 25 Nm), ***(fig. 3.1-6)***.

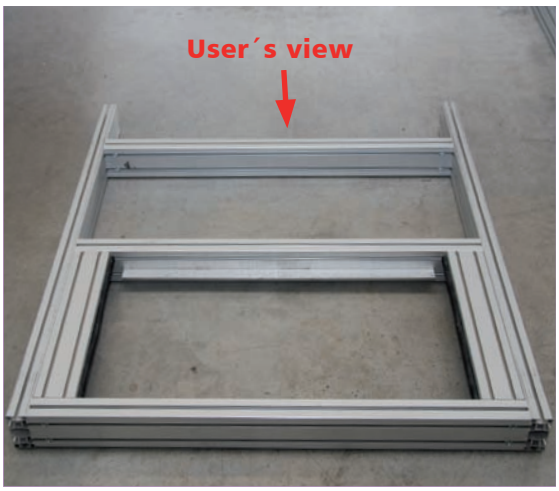


fig. 3.1-3

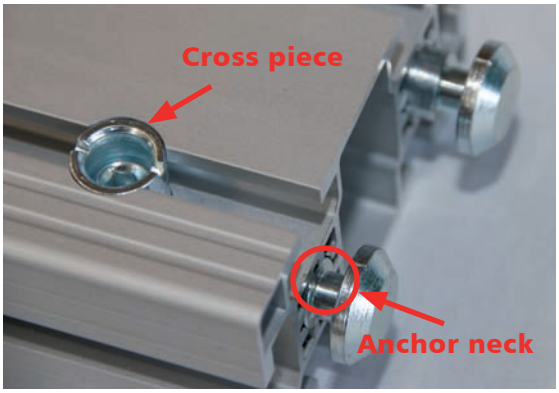


fig. 3.1-4

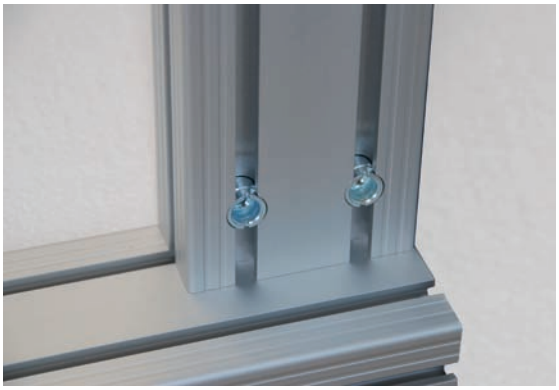


fig. 3.1-5

fig. 3.1-6

Step ❻ Lift the whole construction. You should face the bottom side now (the projecting profile ends point upwards). Now shove the frame base profile **A1c** outwards to place them exactly at the frame base profiles **A1a** and tighten the profile connectors, first the upper ones then the lower ones (ca. 25 Nm), ***(fig. 3.1-7 and 3.1-8)***. Afterwards, also tighten the profile connectors of the frame base profile **A1b** lying directly on the profiles **A1c**. In order to reach the cross pieces, you have to lift the last loose frame base profile **A1b** which will be tightened at a later point.

fig. 3.1-7

fig. 3.1-8

Step ❼ In order to attach the four (4) adhesive rubber feet, remove the protection film and position them at the outer lower edges of the frame base profiles **A1a** ***(fig. 3.1-9 and 3.1-10)***.

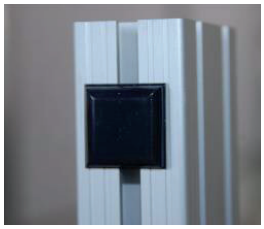


fig. 3.1-9

fig. 3.1-10

II. Attaching the profile angles to the frame base:

Step ❽ The two (2) profiles angles **A1d** will be fitted to the inner sides of the frame base profiles **A1c** between the frame base profiles **A1b** ***(fig. 3.1-11***).
Place three (3) T-Nuts **M8** in the front lead channel (the one that is closest to you) of the lower frame base profile **A1b** and three (3) T-Nuts **M8** in the front lead channel of the overlying frame base profile **A1b**. Insert the T-Nuts by half-twisting them into the lead channels with the spring ahead.

fig. 3.1-11

Step ❾ Roughly estimate the concentric position of the profile angles **A1d** and align the T-Nuts appropriately. Since the weights will be placed on the profile angles, the angle should be attached with the surface pointing away from you ***(fig. 3.1-11***). Screw on the profile angles at the two (2) lower frame base profiles **A1b** using the T-Nuts and the six (6) fillister head screws with flange **M8x16** (3 per angle). Afterwards, place the whole construction down on the floor again. The projecting profile ends should point towards you.

Step ❿ Now pull up the last loose frame base profile **A1b** towards you. The distance between the ends of the projecting profiles **A1a** and the front edge of **A1b** has to be **183 mm | 7.2 inch**. Strongly tighten the profile connectors of the frame base profile **A1b** (ca. 25 Nm), ***(fig. 3.1-12)***.

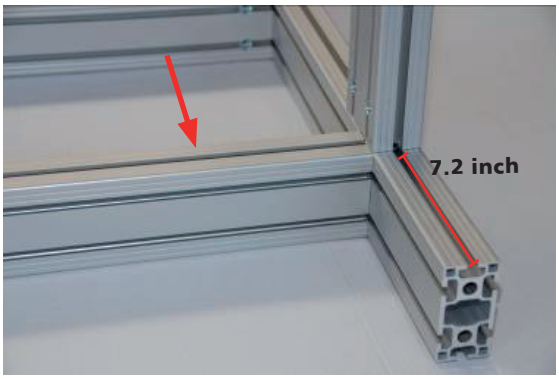


fig. 3.1-12

Step ⓫ Cut the seal rubbers to the length of the frame base profiles **A1c** (**418 mm | 16.46 inch**) using a cutter and press them into the two lead channels (point inwards) of the frame base profiles **A1c** ***(fig. 3.1-13)***. The seal rubbers protect the edges when placing the weights at the rear side.

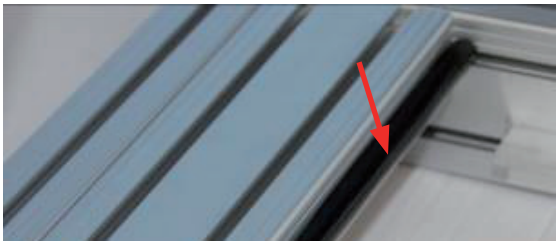


fig. 3.1-13

3.1.3.2 Assembling the aluminium frame

I. Setting up the side supports:

The aluminium profile serves as the frame of the **t**wall®*Basic16* in order to be installed free-standing ***(fig. 3.1-14)***.

Step ⓬
Place the frame base **A1** with the rubber feet at the lower side the way that the projecting profiles **A1a** are facing you ***(fig. 3.1-15)***. To ensure the **t**wall® is firm and stable, a compact and even stand space is required. Before you start putting together the aluminium frame, please attach all the profile connectors to the provided positions at the side supports and the frame profiles ***(fig. 3.1-16)***.

fig. 3.1-14

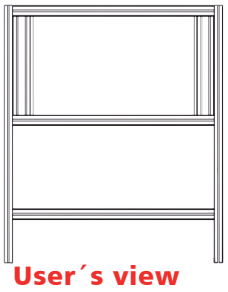


fig. 3.1-15

In order to fasten the profile connectors, the chamfering should point towards the cross piece which is indicated by the mark at the anchor. Slightly screw the set screw into the cross piece using the corresponding Allen key. The anchor will be drawn into the profile automatically.

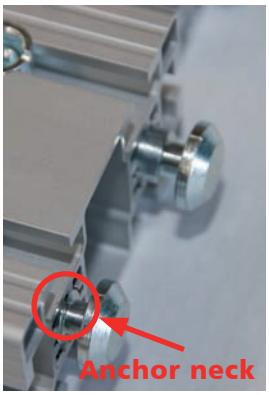


fig. 3.1-16

fig. 3.1-17

It is important that you can still see the neck of the anchor ***(fig. 3.1-16)*** to be able to insert it into the lead channels at a later point. It might be the case that you need to push the anchor slightly against the cross piece while screwing it in The profile connectors with the bended anchors will be assembled to the angles braces in the same way ***(fig. 3.1-17)***.

Please make sure that the alignment of the anchors matches the cant of the angles braces (45°).

Step ⓭ Shove the side supports **A2a** from the front into the lead channels of the frame base. Move them to a third of the whole length of the frame base profile **A1a (*fig. 3.1-18)***.

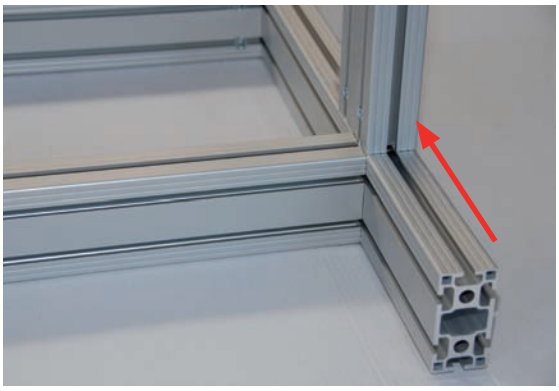


fig. 3.1-18

Please make sure that the cross pieces of the profile connectors at the side supports point inwards. At this stage the profile connectors should not be tightened yet.

II. Mounting the angles braces:

Step ⓮ Shove the two (2) angles braces **A2c** top down into the lead channels at the rear side of the side supports **A2a** ***(fig. 3.1-19)***. The cross pieces of the profile connectors should point inwards. Now you should be able to insert the profile connectors with the bended anchor at the end of the angles braces **A2c** into the lead channel of the frame base profiles **A1** ***(fig. 3.1-20)***.

fig. 3.1-19

fig. 3.1-20

Step ⓯ Now move the side supports **A2a** together with the angles braces **A2c** towards the projecting ends again so that the side supports **A2a** are on the same level as the frame base profile **A1b** and can be flush-mounted ***(fig. 3.1-21)***. Strongly tighten the profile connectors at the side supports **A2a** and the profile connectors on both ends of the angles braces (ca. 25 Nm).
Please make sure that the angles braces fit straightly to the side supports and the frame base ***(fig. 3.1-22 and 3.1-23***).

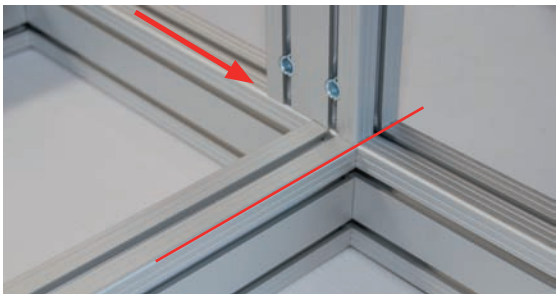


fig. 3.1-21

Step ⓰ Finally, attach the four (4) black cover caps at the ends of the frame base profiles **A1a**.

fig. 3.1-22

fig. 3.1-23

III. Fitting the cross members:

Step ⓱ The first cross member **A2b** will be inserted top down into the front lead channel (you are facing the projecting profiles) between the side supports **A2a** ***(fig. 3.1-24)***. Measure a distance of 1000 mm | 39.37 inch from the floor to the lower edge of the cross member and tighten the profile connectors of the cross member (ca. 25 Nm).
The cross pieces of the profile connectors should point to the rear side.

fig. 3.1-24

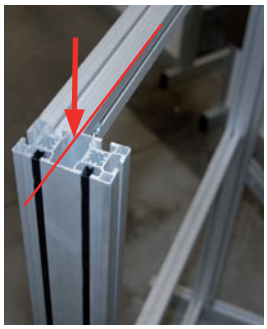


fig. 3.1-25

Step ⓲ Shove the second cross member **A2b** into the front lead channel of the side supports. It has to be on the same level as the top of the side supports **A2a** and should be flush mounted ***(fig. 3.1-25)***. The cross pieces of the profile connectors point to the rear side again. Now strongly tighten the profile connectors of the cross member using the torque wrench (ca. 40 Nm).

Step ⓳ Place the two (2) weights **A4** at the rear side of the frame base **A1** ***(fig. 3.1-26)***. Please be aware of the industrial safety regulations (20kg .| 44 lbs per weight).

fig. 3.1-26

Step ⑳ In order to assemble the basic module, please insert eight (8) T-Nuts **M8** into the front lead channels of the side supports **A2a** and the upper cross member **A2b** as follows:

Abstände:	
2 x into the upper cross member: from the outer edge of the side support **A2a** to the middle of the T-Nut at each side	75 mm | 2.95 inch
2 x into the upper cross member again: from the outer edge of the side support **A2a** to the middle of the T-Nut	100 mm | 3.94 inch
2 x into the lead channel of the right side support and 2 x into the lead channel of the left side support	

Step ㉑ Now screw the two (2) socket head screws **M8x40** into the pre-assembled T-Nuts at the upper cross member ***(fig. 3.1-27)***.

Step ㉒ Finally, put the two (2) black cover caps on the top ends of the side supports **A2a** and press the four (4) grey PVC combination profiles into the outward lead channels of the side supports (above the cross pieces of the profile connectors, 2 x at the right side and 2 x at the left side).

fig. 3.1-27

PLEASE NOTE: Once having finished the assembly of the aluminium frame, please check whether all profile connectors at the frame base and the aluminium frame are bolted together strongly (ca. 25Nm).

3.1.3.3 Assembling the basic module

Step ㉓ Loosen the eleven (11) fillister head screws **M6x10** at the left and right stainless steel frame covers using the corresponding Allen key and remove them from the basic module **A3**.

Please note: At the right frame cover, you will find the control panel of the twall. The cable connections to the line filter are shown in ***fig. 3.1-28***. ***Fig. 3.1-29*** displays the flat ribbon cables that connect the module to the manifold PCB.

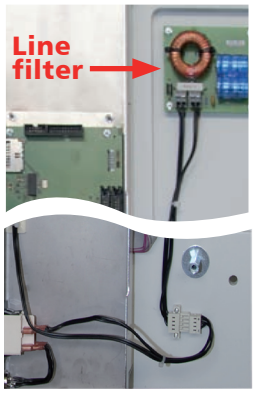


fig. 3.1-28

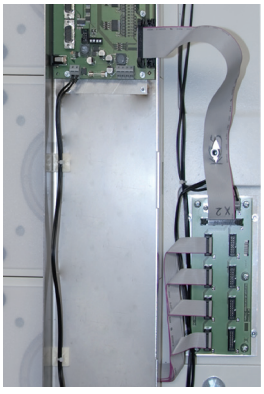


fig. 3.1-29

Step ㉔ Fit the basic module **A3** to the socket head screws **M8x40** ***(fig. 3.1-30)*** and bolt it on to the aluminium frame using the six (6) socket head screws **M8x30** and the six (6) washers ***(fig. 3.1-31)***.

Step ㉕ Remove the protection film at the stainless steel frame covers. Once you have checked and restored the cable connections ***(fig. 3.1-28 and fig. 3.1-29)***, screw them back on again using eleven (11) the fillister head screws. Please handle the electric cables very carefully.
Please do not tear off or jam any electric lines uring the process.

Schritt ㉖ Connect the barrel connector to the 24 V jack of the **t**wall®, the adapter to the power supply line (Euro connector) and the power supply line to a socket and switch on the **t**wall® ***(fig. 3.1-32)***

fig. 3.1-30

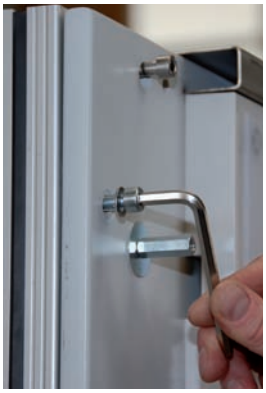


fig. 3.1-31

fig. 3.1-32

3.2 Assembling twall®*Basic16* stationary

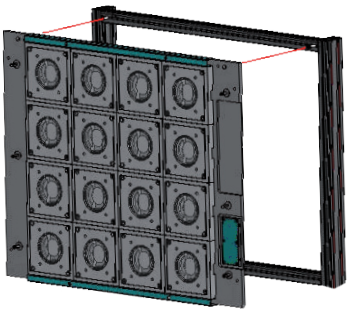


fig. 3.2-1

The **t**wall®*Basic16* basic module **A3** will be mounted to the wall ***(fig. 3.2-1)***. Required are 2 hexagon head wood screws **8x80** and 2 dowels **Ux10x60** as well as a hammer drill, a drill bit size **12 mm | 0.47 inch** and a wrench size **13 mm | 0.51 inch**.

Step ❶ Drill 2 holes into the wall using the hammer drill at a height of **1720 mm | 67.72 inch** and at an interval of **735 mm | 28.94 inch** to each other. However, to avoid obstacles in the wall and to allow children to play at the **t**wall®, the assembly height can be adjusted accordingly.

fig. 3.2-2

Step ❷ Place the dowels in the wall and screw the 2 hexagon head wood screws into the dowels using the wrench. The distance between the dowel and the screw head should be **2,5 mm | 0.10 inch**.

Step ❸ Remove the protection film at the stainless steel frame covers of the basic module **A3**. If necessary, loosen the fillister head screws at the covers and screw them back on again once the whole protection film has been removed. We would recommend to dismantle the **t**wall® while lying on the floor to avoid any damages.

Step ❹ Mount the basic module to the wall by attaching it to the hexagon head wood screws. ***(Please fig. 3.2-2)***.

fig. 3.2-3

Step ❺ Connect the barrel connector to the 24V jack of the **t**wall®, the adapter to the power supply line (Euro connector) and the power supply line to a socket and switch on the **t**wall® ***(Please fig. 3.2-3)***.

4 Maintenance

Every sport device is constantly committed to dust and sweat, also the **t**wall®. During frequently use some soil deposit may occur at the touch element covers. To ensure a long durability clean the touch elements once a month, in case of strong frequently use twice a month. Use a soft, non fluffing and try tissue. If there is strong headed soil deposit you also can combine it with a mild detergent / disinfectant.

ATTENTION: Never use dissolver or petrol, otherwise the touch elements may be damaged!

5 Troubleshooting

Potential mailfunction source

- Check for sufficient power supply. Pay attention to correct connection between power suppla pack to twall® power outlet.
- In case of hazard check for sufficient distance to devices that produce strong magnetic or electric fields like strong loudspeaker or microwaves.
- If any liquids or external objects attain into inner areas of the twall contact your service partner

6 Technical specifications

6.1 Data sheet twall®*Basic16* mobile and stationary

- Autarkic, multicolored interactive indoor training device twall®*Basic16*
- Integrated control panel, 10 preinstalled training programs
- Graphic program surface to create favored programs
- 4 x 4 touch elements
- Active training area in mm | inch (h x w): 880 x 880 | 34.65 x 34.65
- Dimension of whole device mobile in mm | inch (h x w x d): 1865 x 1135 x 1105 | 73.4 x 44,7 x 43.5
- Dimension of whole device stationary in mm | inch (h x w x d): 930 x 1135 x 50 | 36.6 x 44.7 x 2.0
- Weight in kg | lbs (mobile) approx 115,3 | 509.3 lbs
- Weight in kg | lbs (stationary) approx 35,3 | 255.7 lbs
- Up to 7 fluorescent colors (red, green, blue and mixed colours)
- Frame: stainless steel
- Touch elements: plastic, color translucent white
- Power input: 40 W
- Power supply: 24 V (power supply jack and switch)
- Freestanding (mobile) or wall fastening (stationary)
- Maintenance intervals:
  - semi-annual and according to the terms of lease respectively (mobile)
  - once a year (stationary)
- Guarantee 1 year

6.2 Data sheet - Accessories

fig. 6.2-1

- Power supply line (with Euro connector)
- USB cable (A/B)
- AC adapter (power supply unit) with barrel connector ***(fig. 6.2-1)***
  - AC adapter
    - Primary 90-264 V AC; 47-63 Hz
    - Secondary 24 V DC; 5 A
    - Dimensions (h x w x d in inch): 1.38 x 2.44 x 6.69
    - Weight (in lbs): approx. 1.17
    - Euro connector
  - Barrel connector ***(fig. 6.2-2 and fig. 6.2-3)***
    - Pin 1 and Pin 2 + 24 V
    - Pin 3 and Pin 4 - 0 V

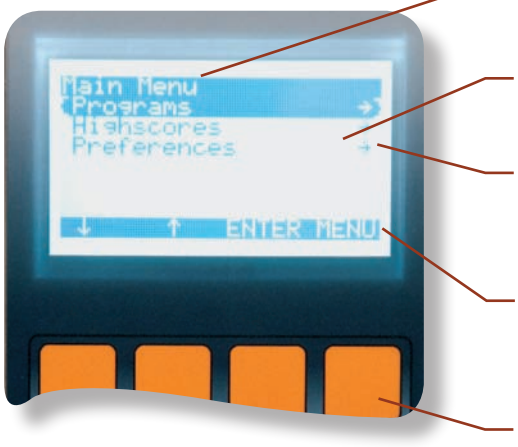
fig. 6.2-2

fig. 6.2-3

Software documentation

7 Operating twall® using control panel

The **t**wall® can be completely operated using the integrated control panel and neither computer nor notebook are required. The display shows a menu which can be controlled using the four yellow operating buttons below.



❶ The top row shows the menu name.

❷ The first row displays the menus functions that can be controlled using the yellow buttons.

❸ The right arrow indicates that the menu selected has got further submenus.

❹ The current menu function is highlighted in black.

❺ Operation buttons.

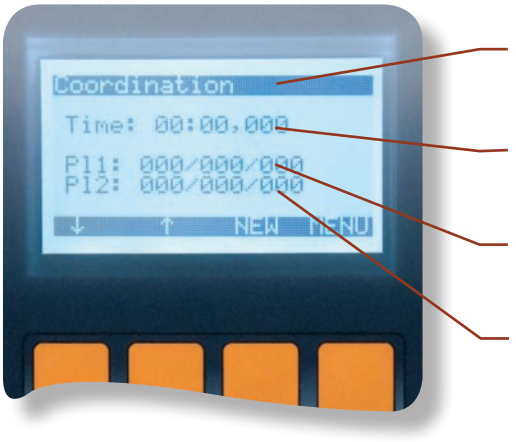
In order to navigate through the main menu and its submenus the operating buttons can be used as follows:

- Press the Arrow down - button to select the menu following the current one.
- Press the Arrow up - button to select the menu shown above the current one.
- ENTER leads into the selected function or menu.
- MENU cancels the current menu.

Please be aware that in certain submenus different functions can be assigned to the operating buttons.

7.1 Executing twall® programs

To execute a **t**wall® program using the menu, select the menu item “Programs” in the main menu and confirm with [ENTER]. This will lead you into the submenu “Programs”. All programs installed on the **t**wall® will be displayed. Select the required program with the arrow keys and confirm with [ENTER] to start the program. The status of the program will now be displayed.



❶ At the top the name of the selected program will be displayed.

❷ The second row informs about the current program time.

❸ Status row for Player 1. The three numbers signify: Total Targets/Scored Targets/Mistakes.

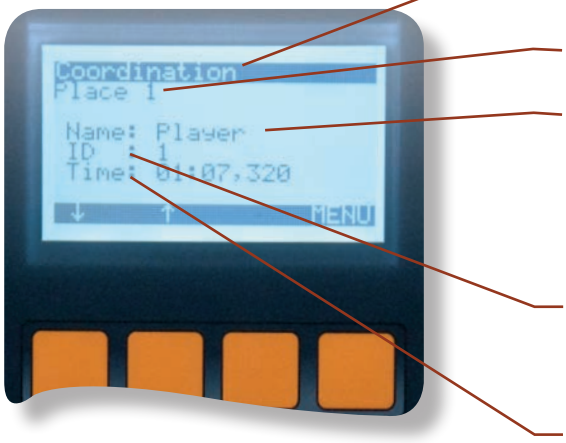
❹ Status row for Player 2. If the program is defined for just one player, this row will disappear after starting the program.

The assignment of the operating buttons is almost identical. In the display above, you can see that the [ENTER] button has been replaced by the NEW button that enables you to restart the program. The next or the previous program in the list of the twall® programs can be loaded using the arrow buttons.

The time starts counting as soon as the first pad at the twall® has been touched. The end of the program will usually be indicated by a short flash up of all twall® touch elements.

7.2 Viewing highscores

Displaying the highscores works the same way as executing the programs. Please select the menu item "Highscores" in the main menu using the [ENTER] button. This opens the menu "Highscores" and a list of the installed programs will be displayed. To view the highscores of a certain program, select the program using the arrow keys and confirm with [ENTER]. Now you can navigate through the highscore list. This page of the screen will always show one highscore.



❶ The top row shows the program the highscore list is currently assigned to.

❷ The ranking is displayed (rank 1-10).

❸ Shows the name of the player. As it is not possible to type in a name into the twall® control panel, the name "Player" will be set automatically. Further names can be entered if the twall® is operated using the computer.

❹ The value "ID" displays the order of the highscore entries. The latest entry in the list always has the highest ID.

❺ In this row the playing time of the highscore entry will be displayed. The shorter the time the better the rank.

7.3 Settings

In the menu "Settings" you can set different parameters of the twall®. The structure of the menu is the following:

- Settings: [Display] - Contrast - Brightness; [Audio][1] - Volume - Balance; [Information on release]

The settings can be changed using the two control keys (+ / -). The set value will be displayed graphically inform of a bar. To confirm the set value, press the [ENTER] button. To cancel the process, press the [MENU] button.

The setting „information on release" contains information on the twall type, the hardware and software release. That information will be required by the service team in case of technical problems that might occur.

[1] only available with twall® sound version

8 Operating twall® using computer

You can operate the twall® without a computer using the integrated control panel. However, to be able to perform certain activities such as creating new programs a software use is required. The following chapters provide an overview on how to install the software.

PLEASE NOTE: The twall® drivers as well as the software and firmware will be updated on a regular basis. You can download the latest version on our website www.twall.de. Please keep the twall® serial number to hand which you can find on the sign next to the twall® [On/Off] switch.

8.1 Connecting twall® to computer

The twall® will be connected to the computer via USB which requires an USB A/B connection cable (included in the scope of delivery). Put the square plug into the appropriate socket at the twall® and the flat USB plug into the computer.

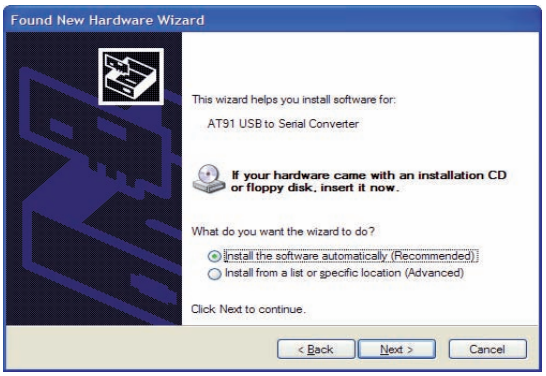
When connecting the twall to the computer for the first time, it recognizes the twall as a new device. In order to install the driver, you have to insert the software CD into the CD/DVD drive. You will require administrator rights on your computer to be able to install the driver.
The following five steps describe the river installation using Microsoft Windows XP® and Microsoft Vista®.

8.2 Driver installation

8.2.1 Installing drivers using Microsoft Windows XP®

Found New Hardware Wizard
Welcome to the Found New Hardware Wizard
Windows will search for current and updated software by looking on your computer, on the hardware installation CD, or on the Windows Update Web site (with your permission).
Read our privacy policy
Can Windows connect to Windows Update to search for software?
Yes, this time only
Yes, now and every time I connect a device
No, not this time
Click Next to continue.
< Back
Next >
Cancel

❶ The first step of the installation is to select “No, not this time” when being asked if the driver should be searched by Windows Update.


Found New Hardware Wizard
This wizard helps you install software for:
AT91 USB to Serial Converter
If your hardware came with an installation CD or floppy disk, insert it now.
What do you want the wizard to do?
Install the software automatically (Recommended)
Install from a list or specific location (Advanced)
Click Next to continue.
< Back
Next >
Cancel

❷ Select “Install software automatically (recommended)”. The CD will be automatically searched for the driver.

❸ If the required driver file “usbser.sys” cannot be found on your computer, you have to define its storage place yourself. On the CD the file is located in folder “drv\winxp” and folder “drv\win2k” respectively. If you are using Windows XP on your computer please select the file from the folder “winxp”. Choose the file from the folder “win2k” if you are using Windows 2000®.

Hardware Installation
The software you are installing for this hardware:
AT91 USB to Serial Converter
has not passed Windows Logo testing to verify its compatibility with Windows XP. (Tell me why this testing is important.)
Continuing your installation of this software may impair or destabilize the correct operation of your system either immediately or in the future. Microsoft strongly recommends that you stop this installation now and contact the hardware vendor for software that has passed Windows Logo testing.
Continue Anyway
STOP Installation

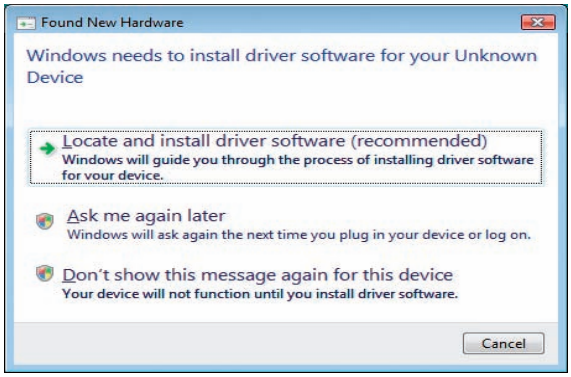
❹ Select "Continue Installation" as shown in the window above.

Found New Hardware Wizard
Completing the Found New Hardware Wizard
The wizard has finished installing the software for:
AT91 USB to Serial Converter
Click Finish to close the wizard.
< Back
Finish
Cancel

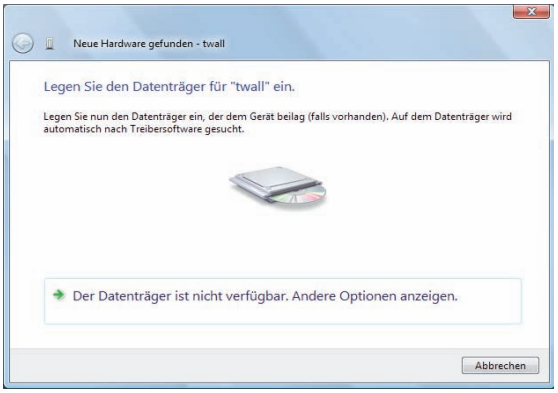
❺ The installation has been completed successfully. Now you can install and use the **t**wall® software.

❻ If you connect the **t**wall® to another USB slot the driver will be installed once again. This happens automatically. However, the administrator rights are required for this process.

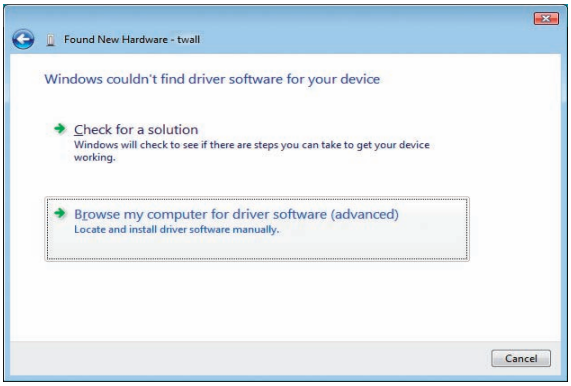
8.2.2 Installing drivers using Microsoft Windows Vista®


Found New Hardware
Windows needs to install driver software for your Unknown Device
Locate and install driver software (recommended)
Windows will guide you through the process of installing driver software for your device.
Ask me again later
Windows will ask again the next time you plug in your device or log on.
Don't show this message again for this device
Your device will not function until you install driver software.
Cancel

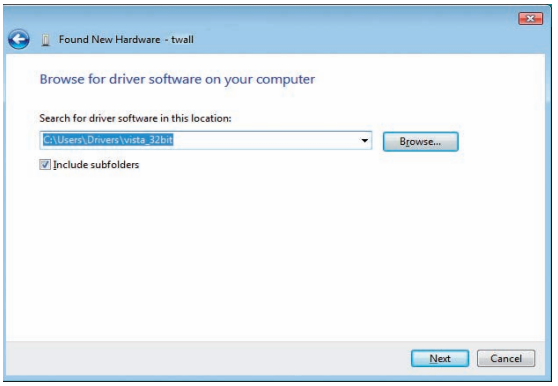
❶ Please select the first paragraph "Locate and install driver software (recommended)".


Neue Hardware gefunden - twall
Legen Sie den Datenträger für "twall" ein.
Legen Sie nun den Datenträger ein, der dem Gerät beilag (falls vorhanden). Auf dem Datenträger wird automatisch nach Treibersoftware gesucht.
Der Datenträger ist nicht verfügbar. Andere Optionen anzeigen.
Abbrechen

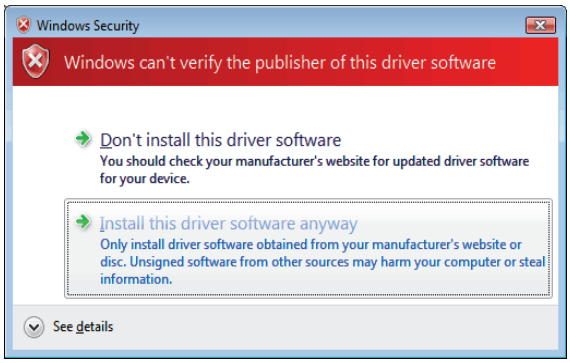
❷ If this window appears, please select the green arrow ". („...Display further options").

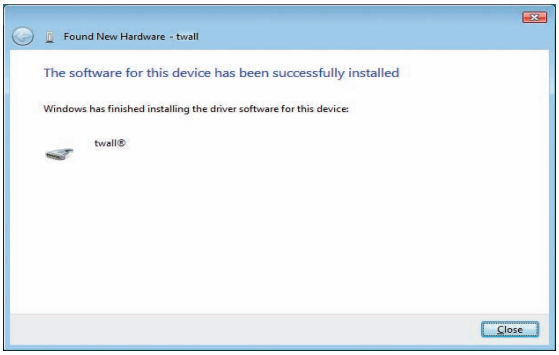

Found New Hardware - twall
Windows couldn't find driver software for your device
Check for a solution
Windows will check to see if there are steps you can take to get your device working.
Browse my computer for driver software (advanced)
Locate and install driver software manually.
Cancel

❸ Please select the second green arrow "Browse my computer for driver software".



❹ Please press the buttom [Browse...] and select the directory: "Driver\vista_32bit" on the Data-CD and click on [Next]


Windows Security
Windows can't verify the publisher of this driver software
Don't install this driver software
You should check your manufacturer's website for updated driver software for your device.
Install this driver software anyway
Only install driver software obtained from your manufacturer's website or disc. Unsigned software from other sources may harm your computer or steal information.
See details


Found New Hardware - twall
The software for this device has been successfully installed
Windows has finished installing the driver software for this device:
twall®
Close

❺ Please select the second green arrow "Install this software anyway".

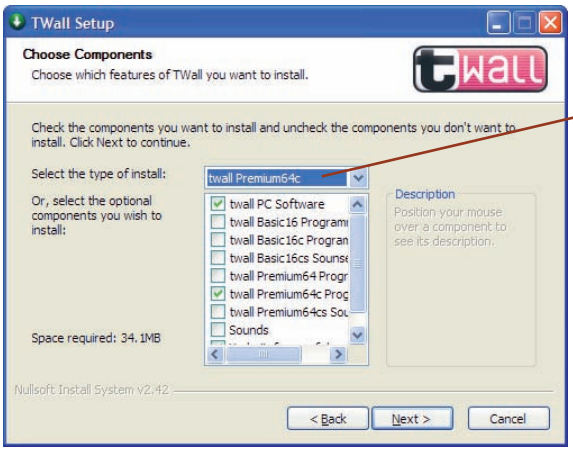
❻ The driver installation of the **t**wall® has been completed successfully. You can now use the **t**wall®.

❼ If you connect the **t**wall® to another USB slot, the driver will be installed once again. That happens automatically. However, administrator rights are again necessary for this process.

8.3 Software installation

In order to install the **t**wall® software, please insert the **t**wall® software CD into the CD/DVD drive of your computer. Start the file „TwallSetup-1.0.exe" and follow the instructions on the screen.

We would recommend that you select the installation type that refers to your **t**wall®. When selecting „Complete installation" all programs of all **t**wall® versions will be installed. Please be aware that a program for **t**wall® version A might not be compatible with **t**wall® version B.


TWall Setup
Choose Components
Choose which features of TWall you want to install.
Check the components you want to install and uncheck the components you don't want to install. Click Next to continue.
Select the type of install:
twall Premium64c
Or, select the optional components you wish to install:
twall PC Software
twall Basic16 Program
twall Basic16c Progran
twall Basic16cs Sounse
twall Premium64 Progr
twall Premium64c Prog
twall Premium64cs Sou
Sounds
Description
Position your mouse over a component to see its description.
Space required: 34.1MB
Nullsoft Install System v2.42
< Back
Next >
Cancel

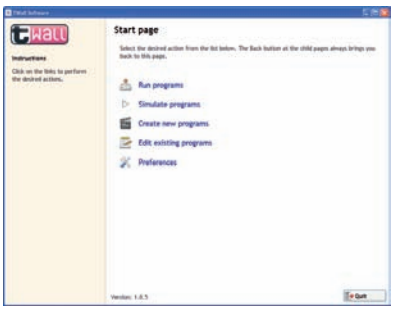
Select the installation type that refers to your **t**wall® version or select "Complete installation" to be able to connect optional **t**wall® products and to create links to your desktop.

Once the installation has been completed, you will find three links in the top menu and on the desktop respectively. Having finished the installation, these links will start the **t**wall® software with a different range of functions.

- **t**wall® full functional extent (including editing of settings)
- **t**wall® (Execute programs only): Allows the execution of **t**wall® programs at the **t**wall® and the simulation of **t**wall® programs at the computer.
- **t**wall® (Execute and edit programs): As described in No 2 including the possibility to edit **t**wall® programs.

Such restricted software functions can be installed on computers that are used, for example, in public areas.

8.4 Software description

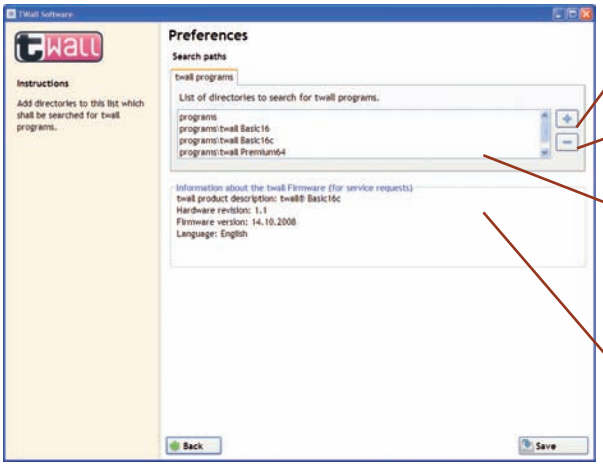


8.4.1 The welcome page

Having started the software the welcome page of the software will be displayed. Click on the links to execute the function requested.

8.4.2 Program settings

Having first started the **t**wall® program for the first time (link „TWall"), we would recommend to adjust the program settings.



❶ Add a new directory to the list using the button (+).

❷ Delete the selected directory entry from the list using the button (-).

❸ This is the list of directories where you can search for **t**wall® programs. In these directories it will be searched for **t**wall® programs to fill the program selection boxes in the **t**wall® software.

❹ This box will display information about the connected **t**wall® .

WARNING: Once the installation has been completed, the list of directories for **t**wall® programs only contains the directories of the standard programs in the software installation folder. Please do not save any personal programs in this directory as they will be deleted when uninstalling the software.

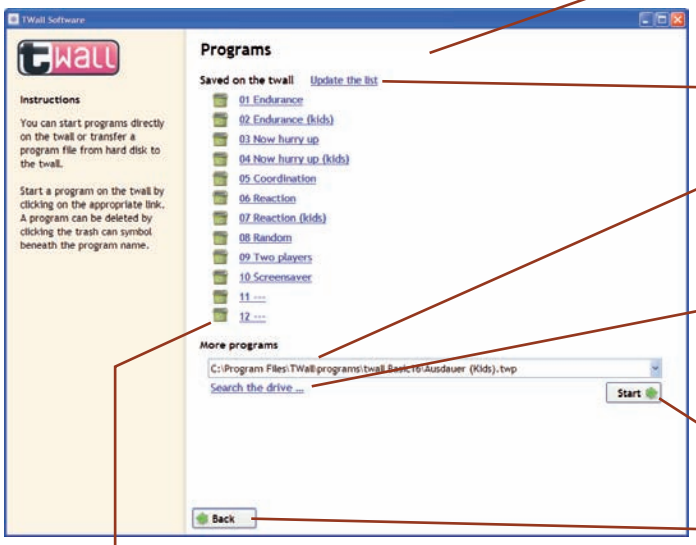
Therefore, we would recommend to add a directory to the list which will be kept separately from the **t**wall® *software installation folder (e.g. a new directory in "My Documents") and where you can save your own programs.*

Once all settings have been adjusted, click on the [Save] button to save the changes.

8.4.3 Executing twall® programs

Using the function „programs", you can

- execute **t**wall® programs that are installed on the **t**wall®
- transfer **t**wall® programs from the hard disk to the **t**wall® and execute them.
- save loaded **t**wall® programs
- view highscores for **t**wall® programes


TWall Software
Programs
Instructions
You can start programs directly on the twall or transfer a program file from hard disk to the twall.
Start a program on the twall by clicking on the appropriate link. A program can be deleted by clicking the trash can symbol beneath the program name.
Saved on the twall
Update the list
01 Endurance
02 Endurance (kids)
03 Now hurry up
04 Now hurry up (kids)
05 Coordination
06 Reaction
07 Reaction (kids)
08 Random
09 Two players
10 Screensaver
11 ---
12 ---
More programs
C:\Program Files\TWall\programs\twall Basic16 Ausdauer (Kids).twp
Search the drive ...
Start
Back

❶ This is the list of programs located on the **t**wall®. Start a program by clicking on the appropriate link.

❷ Refresh the list of programs on the **t**wall® with this button.

❸ The choice box shows all **t**wall® programs that could be found in the folders searched through.

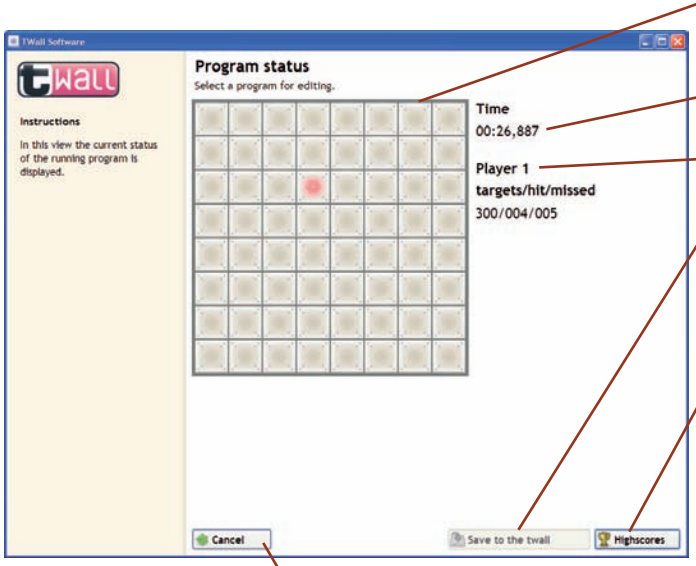
❹ By using this link, you can add a single file to the list which was not found in one of the folders searched through.

❺ Click on this button to send the selected program to the **t**wall® in order to start it.

❻ Clicking on the "Back" button will lead you to the welcome page again.

❼ Use the recycle bin to delete a selected program.

Has a program been loaded, the software switches to the status display automatically. The status of the program (elapsed time, score etc.) will be displayed. Here you can save the loaded program to the **t**wall®.



❶ This field represents the current view of the **t**wall®.

❷ Current playing time will be displayed.

❸ This is the status display for Player 1.

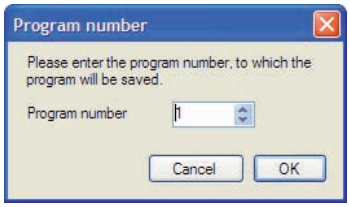
❹ The currently loaded program can be saved to the **t**wall® using this button. This is only possible for programs transferred from the hard disk.

❺ By using this button, the highscores of the program will be displayed.

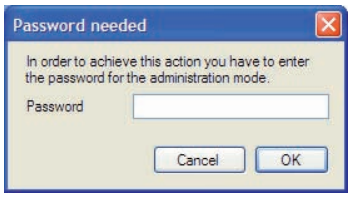
❻ This button stops the execution of the loaded program. The software switches back to the "program" page if you click the button a second time.

8.4.3.1 Saving programs to twall®

When clicking on "Save on the **t**wall®", a dialog box appears. Here you have to enter the program number you wish the program to be saved under. The number matches the program number in the list of programs located on the **t**wall®.



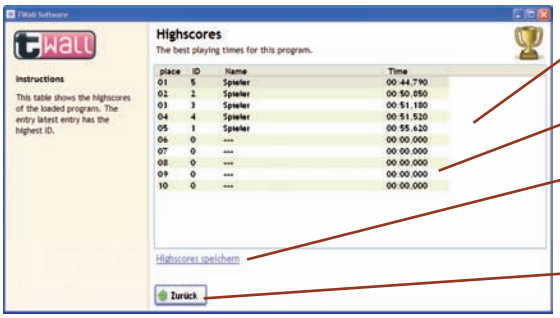
To save a program to the twall®, a password is required. Enter the password into the following dialog box.


Password needed
In order to achieve this action you have to enter the password for the administration mode.
Password
Cancel
OK

PLEASE NOTE: The password can be found on a label on the last page of the manual. Give access to people only who are allowed to save programs to the twall®.

8.4.3.2 Highscores

By using the button "Highscores" in the status display, the list of the highscores for the currently executed program will be loaded. The latest entry in the list is highlighted. List of high scores. The latest entry also has the highest ID.


Highscores
The best playing times for this program.
Instructions
This table shows the highscores of the loaded program. The entry latest entry has the highest ID.
Highscores speichern
Zurück

❶ The latest entry in the list is highlighted.

❷ Empty entries.

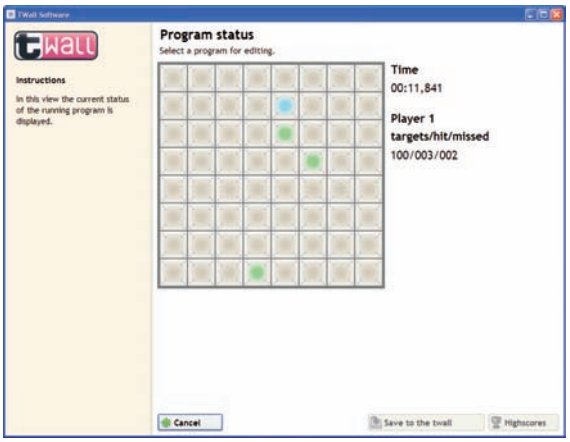
❸ This link saves the highscore list as the "highscores" file.

❹ Back to the status display.

The twall® would pick up the highscores if the program was started using the twall®. If the program was transferred from the computer to the twall®, the highscores will automatically be saved in a "highscores" file. In this case, it will be possible to enter a name when reaching a highscore position. This highscore file containing the gained scores can be transferred to the twall® when saving the program to the twall® at a later point.

8.4.4 Simulating twall® programs

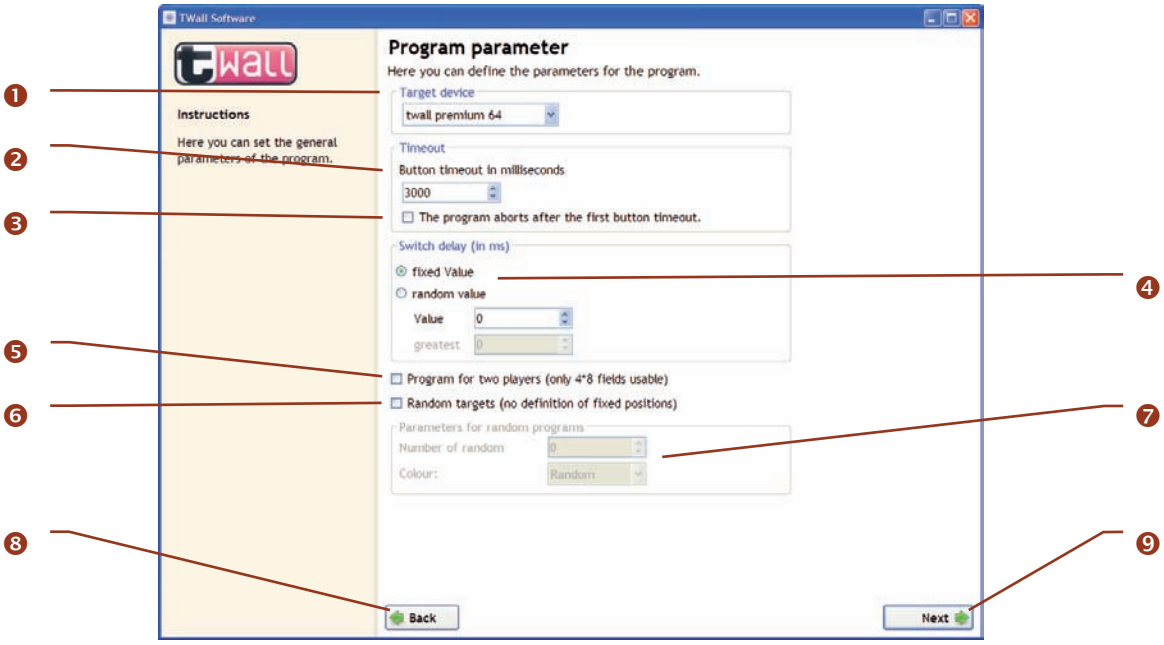
The program function "Simulate programs" offers the possibility to execute twall® programs on the computer without using the twall® itself. This is very useful, for example, when recently created programs have to be tested.
Having selected the program to be simulated, the software switches to the status display automatically. The functions "Save to the twall®" and "Highscores" cannot be selected during the simulation.



In contrast to the status display for programs that are executed on the twall®, the here stylized twall® is an interactive element. During the simulation, you click on the appropriate graphical touch pads using your computer mouse instead of touching the push buttons at the twall®.

8.4.5 Creating new twall® programs

You can create new twall® programs using the program editor of the twall® software. On the first page of the program editor you have to set the general program parameters.



❶ In the choice box called "Target devise" you can set the twall® type the program is intended for.

❷ Here you can set a timeout for the touch pads. It is the maximum time that can pass between activating (switching on) and deactivating (touching) a touch pad. The timeout will be displayed in milliseconds between 1 and 65000. Longer timeouts are not permitted for heating reasons. We advise that you avoid to set two identical targets when having specified a very high timeout. Also, set the value to zero ("0") if you do not want to use a timeout.

❸ Once a timeout has been set and that field been activated, the program will stop the execution as soon as the timeout runs out. Typically in this case, the twall® will rate the current target as an error and will activate the next pad.

❹ The switch delay is the time between the deactivation of a touch pad and the activation of the next pad. The standard setting is zero (no delay). Select "fixed value" and enter a value into the box called "value" to achieve a delay around that value. Select "random value" and enter two values into the two boxes "lowest" and "highest" to get a random switch delay within the range set (for each new target a new delay will be set).

❺ Select this option to create a program for two players. On the following page, you will be able to specify targets on the left side of the twall® only. The program will be identical for the second player (right side of the twall®).

❻ If you select this option, the following page on which individual targets can be set will be dropped. Instead, the program will already be saved by clicking on the "Next" button. When executing the program at the twall®, the target positions will be chosen randomly.

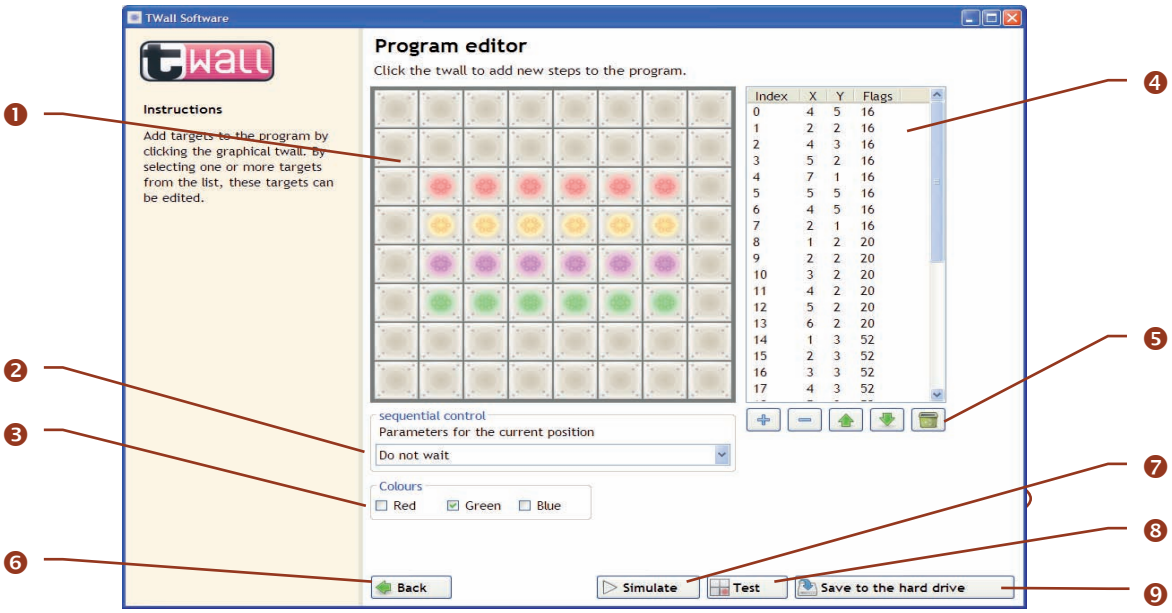
❼ Enter the number of random targets and their colors here. You can either choose a regular color or – similar to the targets – the colors can occur randomly.

❽ Back to the home page.

❾ To the next page of the program editor.

The individual targets will be set on the second page of the editor. The program editor operates in two different modes: Create and Edit. If there is no target selected in the list of defined targets, a new target will be added to the list by clicking on any touch pad of the graphical twall®. The defined parameters/colors refer to the next target to be added.

If an individual target is selected from the list, you can change its position by clicking on any touch pad of the graphical twall®. The change of parameters also refers to the selected target. If more than one target is selected in the list, only the parameters of the selected targets can be altered.



❶ Add new targets to the program by clicking on the graphic pads.

❷ Set the behaviour of the sequential control for the selected or the next target. The parameter indicates on which occasion the sequential control is supposed should switch to the next target.

❸ Here you can set the color for the selected or the next target. The individual colors will be mixed additively (red + green + blue make white).

❹ This is the list of the defined results. The index indicates the serial number of the targets in the program sequence, X and Y represent the horizontal and vertical target position. The flags contain the color and parameters required for the sequential control.

❺ Add new targets to the list using these buttons. You can also delete or rearrange the targets or even delete the complete list.

❻ Back to page 1 of the program editor.

❼ The edited program can be simulated using this button. In order to do that, it has to be saved on your hard disk first.

❽ Transfers the program to the twall® and executes it directly. In this mode, nothing can be saved to the twall®.

❾ Saves the program on the hard disk.

The following parameters are defined for the sequential control.

- **Wait until exactly this pad has been touched:** This is the standard setting. Once the current target has been deactivated or the timeout has run out, the program can continue with the next target.
- **Wait until any active pad has been touched:** The program only continues with the next target if an active (flashing up) pad has been deactivated or if the timeout has run out.
- **Wait until any pad has been touched:** The program only continues with the next target if any pad – no matter if active or not – has been touched or the timeout has run out.
- **Wait until the last active pad has been touched:** The program only continues with the next target if the last active (flashing up) pad has been deactivated or the timeout has run out. That mode is particularly helpful when many pads are flashing up at the **t**wall® and are to be deactivated before the program is finished or the program sequence can be continued.
- **Do not wait:** Immediately after activating the pad, the program continues with the next target. This mode is required to switch on many pads at the same time.

The following functions are available to edit targets in the list:

Adds a new element to the list by duplicating the currently selected element or the last element in the list.

Removes the selected elements from the list.

These buttons move the selected element one step up or down.

Deletes the complete list.

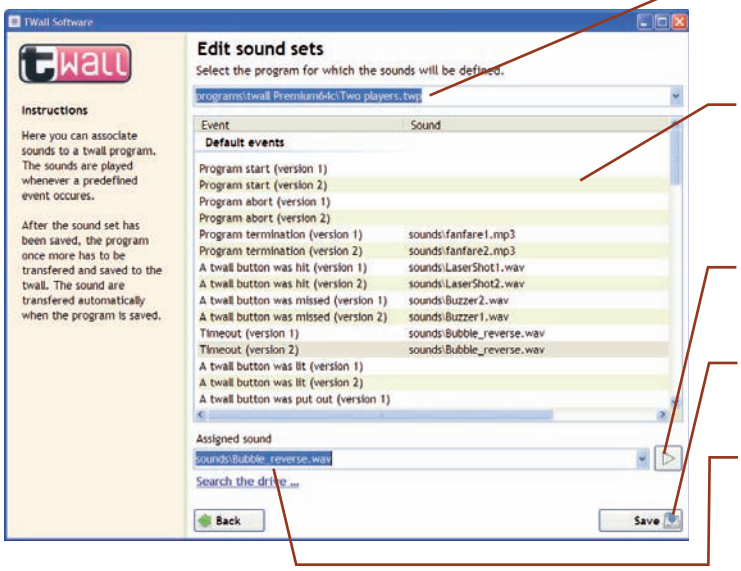
8.4.6 Editing **t**wall® programs

To edit **t**wall® programs at a later point, go back to the welcome page and click on “Edit existing programs”. Then select the program to be edited from the selection box. Otherwise, the editing of the program works the same way as described in “create new programs”.

8.4.7 Editing Sound sets

Using the sound sets, sounds can be saved to certain events of a **t**wall® program. One sound set can be assigned to each **t**wall® program. In order to save sounds to the **t**wall®, the program has to be transferred from the computer to the **t**wall® (please see chapter 8.4.3 “Executing **t**wall® programs”). In that case, the sound will be transferred automatically to the SD (secure digital) card of the **t**wall® (the card has to be inserted into the SD card slot).

[2] only available with **t**wall® sound version


TWall Software
Edit sound sets
Select the program for which the sounds will be defined.
programs\twall Premium64c\Two players.twp
Instructions
Here you can associate sounds to a twall program. The sounds are played whenever a predefined event occures.
After the sound set has been saved, the program once more has to be transfered and saved to the twall. The sound are transfered automatically when the program is saved.
Event
Sound
Default events
Program start (version 1)
Program start (version 2)
Program abort (version 1)
Program abort (version 2)
Program termination (version 1) sounds\fanfare1.mp3
Program termination (version 2) sounds\fanfare2.mp3
A twall button was hit (version 1) sounds\LaserShot1.wav
A twall button was hit (version 2) sounds\LaserShot2.wav
A twall button was missed (version 1) sounds\Buzzer2.wav
A twall button was missed (version 2) sounds\Buzzer1.wav
Timeout (version 1) sounds\Bubble_reverse.wav
Timeout (version 2) sounds\Bubble_reverse.wav
A twall button was lit (version 1)
A twall button was lit (version 2)
A twall button was put out (version 1)
Assigned sound
sounds\Bubble_reverse.wav
Search the drive ...
Back
Save

❶ Please select the **t**wall® program you wish to edit the sound set for.

❷ In that list, you can find all events that are saved to the **t**wall® program. The column "Sound" will list all sounds assigned.

❸ Select that button and you can listen to the sound.

❹ You can save the selected settings using that button.

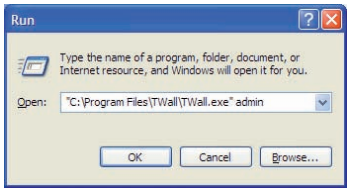
❺ Once you have selected an event out of the ones that are listed, you can assign a sound to the event.

8.5. Firmware update

You can update the firmware of your **t**wall® using the **t**wall® computer software. In order to update the firmware, the required Atmel drivers and software tools have to be installed (the setup program for these tools starts automatically during the **t**wall® computer software setup). Please, always use the latest **t**wall® computer software for firmware updates.
Please follow the steps as described below:

❶ Connect the **t**wall® to your computer using the USB cable.

❷ Start the **t**wall® computer software with the command „admin". The easiest way of doing that is to select "Run" in the Windows start menu. If you have saved the software in a different directory, you might need to change the name of the path to the **t**wall® computer software.



❸ Select the link [Preferences] in the main window of the **t**wall® computer software. Here, you will be presented with two buttons [Firmware update] and [Initialize twall].

❹ Select the button [Firmware update].

twall firmware update
This dialog can be used to download a new firmware file to your twall. Enter the name of the .hex file into the edit box. Do not quit the application while the update is running.
search the drive
Delete Flash
Program the twall
Restart the twall
Cancel
Update

❺ Please select the new firmware file as shown in the window. Firmware files always have the file ending .bin.

❻ Click on the button [Update].

❼ A new window will appear. Please enter the password for the **t**wall®. You will find the password on the last page of this user manual.

❽ During the update, you will be asked twice to restart the **t**wall®. This can be done by switching the **t**wall® off and on again.

Information
Now, restart the twall by switching it off and then on again. Do not click the OK button until the twall is switched on again!
OK

❾ Nach dem erfolgten Update muss die **t**wall® Software neu gestartet werden. Das Update ist nun abgeschlossen.

9 Standard twall® programs

Every twall® version will be delivered with 10 preinstalled programs. The programs are part of the scope of delivery and can differ depending on the version. In the following table you will find the standard programs and program descriptions for the different twall® versions.

twall®*Premium64* - Standard programs	
Endurance	300 defined targets, 5 seconds key-timeout,
Endurance (children)	300 defined targets, 5 seconds key-timeout, limited to the 4 bottom rows
Hurry up	In this game, the cyan-colored pads flash up randomly and change their colors to green after a certain time (also randomly). The player has to try to deactivate the pads as long as they flash up in cyan. Green keys that are touched are considered to be failures. The game finishes once 100 cyan-colored pads have been deactivated.
Hurry up (children)	Version of „Hurry up“, limited to the 4 bottom rows
Coordination	Program to train the independence of the left and the right hand. Two targets flash up horizontally and vertically with different delays. The left target has to be deactivated by using the left hand, the right target by using the right hand.
Reaction (female)	50 defined targets that flash up after a certain time (randomly/ max. 1.5 sec.), the 2 rows at the top are not used
Reaction (male)	50 defined targets that flash up after a certain time (randomly/ max. 1.5 sec.)
Screensaver	The program displays an automatic animation.
2 Players	175 defined targets, 3 seconds key-timeout, program for 2 players
2 Players (children)	75 defined targets, 3 seconds key-timeout, program for 2 players, limited to the 4 bottom rows
twall® test	A program with column and row sequences to test the LED functionality.
touch pad test	A program to test individual touch pads. The LED lights up in white when pressing the touch pad. However, it will light up in mixed colors if one or more LEDs are damaged.

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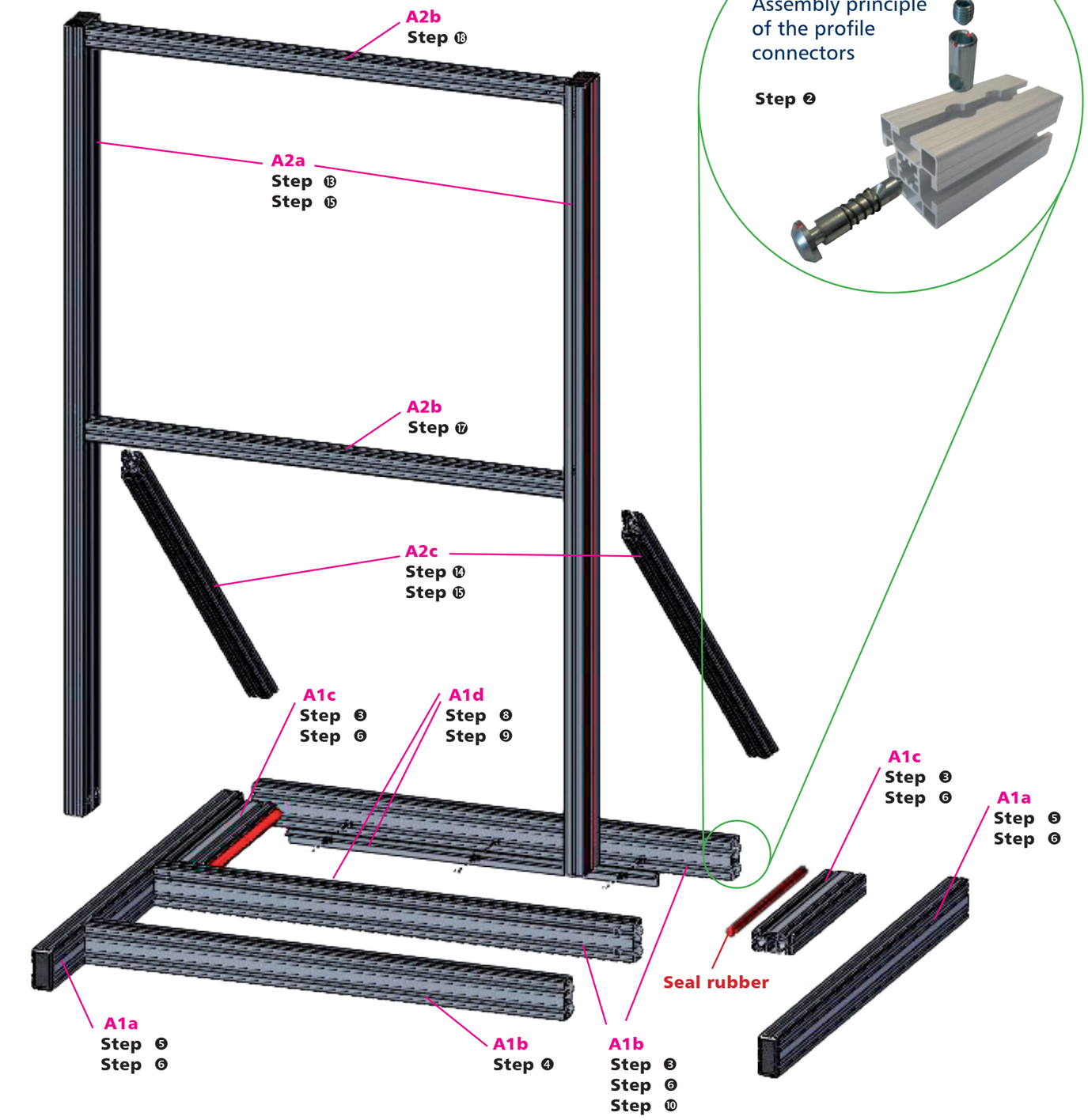
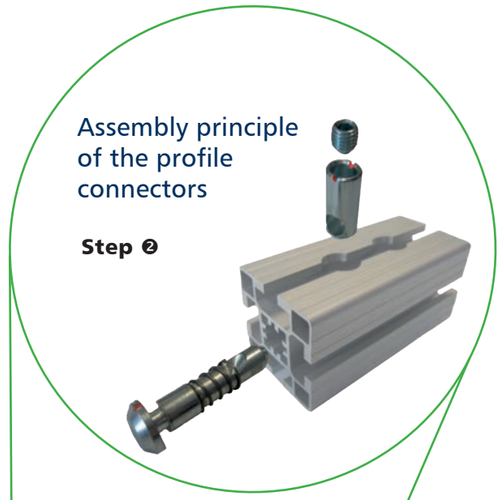
Handout: Individual assembling steps - twall®*Basic16* mobile

Assembling the frame base **A1** and
Assembling the aluminium frame **A2**





We hope you will find that we have provided a useful manual to assemble and to operate the twall. However, please do not hesitate to contact us on info@twall.de with any suggestions you may have to improve this document. We appreciate your help.

Wall mounting - twall®*Basic16* stationary

Distances of the drill holes for wall fastening